

Nicaragua - Rice and Banana Farmers

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Overview

Identification

COUNTRY

Nicaragua

EVALUATION TITLE

Rice and Banana Farmers

EVALUATION TYPE

Independent Impact Evaluation

ID NUMBER

DDI-MCC-NIC-RICEPLANTAIN-IND-2009-v1

Overview

ABSTRACT

This report is an impact evaluation of two components of the Rural Business Development Program (RBD) in Nicaragua, specifically the components benefitting rice and plantain farmers on Nicaragua's Pacific coast. The RBD program helped finance irrigation equipment, inputs, and extension services for plantain producers, as well as extension, inputs, and drying patios for rice producers in 2009 and 2010; the price of rice is a function of its moisture content, and by increasing access to drying patios the RBD program sought to increase the value of sales by producers. Using a unique data set collected for the evaluation, average impacts of the RBD program on participating plantain farmers were estimated using difference-in-differences, while average impacts of the rice component on beneficiaries were estimated using fixed effects regressions. Estimated program impacts were combined with administrative cost data to calculate an internal rate of return for the plantain program and for one aspect of the rice program (construction of drying patios).

Key results of the evaluation are:

-Estimated impacts suggest that the RBD rice program raised yields and revenues by 11% in the 2009 - 2010 growing season and 18% in 2010 - 2011 on average relative to the yields and revenues beneficiaries would have obtained without the program.

-The estimated ERR of the drying patio component of the RBD rice program ranges from 7% under the assumption of a five year lifespan for drying patios to 27% when assuming a 20 year lifespan.

-No ERR was estimated for the input/extension component of the rice program; part of the value of the extension/input bundles received by beneficiaries was to be paid back by each beneficiary farmer to his or her cooperative, and the sum total of payments was to serve as seed money for credit funds managed by cooperatives in future years. The reliance of future benefits of this program component on farmer repayment performance makes its long-term value uncertain; therefore I chose to focus my ERR calculation on the drying patios.

-While average impacts and the drying patio ERR are both positive, RBD rice program impacts are estimated imprecisely, and we cannot reject the null hypothesis that average impacts of the program on yields and revenues were zero.

-Estimated impacts of the RBD plantain program were large and significant for revenues and yields of first quality plantains (harvested plantains come in three different quality grades).

-The average impact of the RBD program on sales suggests that the program raised the value of plantain sales by 72% relative to what beneficiaries would have obtained without the RBD program.

-I use the estimated impact on revenues as well as administrative data on production costs and program costs to estimate the ERR of the plantain program.

-The plantain ERR ranges from -23% when assuming a lifespan of 5 years for irrigation equipment and 13% when assuming a lifespan of 20 years.

-The apparent discrepancy between large impacts on sales and the modest ERR is a reflection of the high cost per

beneficiary of the program, which was around \$15,062 per farmer for the cohort studied here (around \$3.6 million divided by 239 beneficiaries).

EVALUATION METHODOLOGY

Pre-Post

UNITS OF ANALYSIS

Individuals

KIND OF DATA

Sample survey data [ssd]

TOPICS

Topic	Vocabulary	URI
Agriculture and Irrigation	MCC Sector	

KEYWORDS

Plantain, Banana, Farmers, Income

Coverage

GEOGRAPHIC COVERAGE

The districts of Leon and Chinandega

UNIVERSE

450 farm households, including 300 rice producers and 150 plantain producers

Producers and Sponsors

PRIMARY INVESTIGATOR(S)

Name	Affiliation
Michael Carter	
Conner Mullally	

FUNDING

Name	Abbreviation	Role
Millennium Challenge Corporation	MCC	

Metadata Production

METADATA PRODUCED BY

Name	Abbreviation	Affiliation	Role
Millennium Challenge Corporation	MCC		Metadata producer

DATE OF METADATA PRODUCTION

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DDI DOCUMENT ID

DDI-MCC-NIC-RICEPLANTAIN-IND-2009-v1

MCC Compact and Program

COMPACT OR THRESHOLD

Nicaragua

PROGRAM

The goal of the Technical and Financial Assistance activity is to help small- and medium-size farms and agribusinesses transition to higher-profit activities, provide technical and financial assistance to these enterprises, including support that will directly offset certain costs of small farms.

MCC SECTOR

Agriculture and Irrigation (Ag & Irr)

PROGRAM LOGIC

To estimate the economic benefit of the Rural Business Development Project, the change in on-farm income resulting from the Project based on data from similar projects in Nicaragua and data from Australia was estimated. As a baseline, it was assumed that one manzana of land (0.7 Hectares) generates \$100 in net income under current production practices. Three illustrative crops were chosen: plantain, cashew and organic sesame that approximately generate, respectively, US\$2,700, US\$850 and US\$119 in average net income per manzana, from a menu of crops suitable to Nicaragua's growing conditions. Benefits, in the form of increased income per manzana, begin to occur after 12 months of the Project intervention. In addition to on-farm benefits, it was estimated that 7,000 new jobs will be generated as a result of this farm transition. Expected income gains from these new jobs were calculated using an average annual wage rate of \$500 and discounting this wage rate by 0.5 to account for the opportunity cost of labor. The economic internal rate of return for these activities, which does not include the Improvement of Water Supply Activity, is 16%.

PROGRAM PARTICIPANTS

Small- and medium-size farms and agribusinesses

Sampling

Study Population

450 farm households, including 300 rice producers and 150 plantain producers

Sampling Procedure

Rice: To be considered, producers must meet several criteria, which include having sown at least 2 manzanas in rice at some point in the past (1 manzana is roughly 0.7 hectares), owning no more than 50 manzanas of agricultural land, and being at least 20 years of age. MCC chose rice cooperatives based on their ability to organize a sufficiently large number of farmers to participate in the program. In the first meeting between MCC and the cooperatives, each cooperative provided an estimated number of potential program beneficiaries. Any individual farmer within these cooperatives that met the criteria, and was willing to make the matching investment, was able to participate.

Plantain: Farmers must have at least 2 manzanas irrigated land, year-round access to water, and a maximum of 20 non-irrigated manzanas in agricultural land. Any individual farmer within these cooperatives that met the criteria, and was willing to make the matching investment, was able to participate.

Deviations from Sample Design

The original RBS research design consisted of geographically-based randomization, in which farmers in randomly chosen areas would be eligible to participate in the program. However, this randomization did not take rice and banana farmers into account. In the case of these two crops, farmer cooperatives were chosen for project eligibility based on their degree of organization. Rice and banana farmers belonging to these cooperatives were allowed to participate if they met certain farmer characteristics, had legal land titles, and were willing to make the necessary matching investments. This is a very different design than one based on a geographical randomization, and calls for a different evaluation strategy.

Questionnaires

Overview

The evaluation surveyed small and medium rice and banana farmers in rural Nicaragua. The survey covered work, land, quality of life, and opinions on the economic stability of respondents and their families.

Data Collection

Data Collection Dates

Start	End	Cycle
2010-01	2010-02	Baseline
2011-08	2011-09	Endline

Questionnaires

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Data Collectors

Name	Abbreviation	Affiliation
Fundación Internacional para el Desafío Económico Global	FIDEG	

Data Processing

No content available

Data Appraisal

No content available